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1616 S. VOSS ROAD, SUITE 750
HOUSTON, TX 77057-2631

EXAMINER

ALEJANDRO, RAYMOND

ART UNIT	PAPER NUMBER
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1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/714,232

Applicant(s)

BALLANTINE ET AL.

Examiner

Raymond Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 50-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 50-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/14/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12 October 2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I and Species 1 12/26/06 in the reply filed on 12/26/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Priority

2. This application is a continuation of Application No. 10/158705, filed 05/30/02.
3. Acknowledgment is made of applicant's claim for domestic priority under 35 U.S.C. 119(e).

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 10/12/04 was considered by the examiner.

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "320" has been used to designate both "the conduit" and "the cathode exhaust". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

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even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 510, 716, 812, 900. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 509. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be

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labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

8. The disclosure is objected to because of the following informalities: the status of the parent application (whether abandoned or patented/patent#) must be updated. Appropriate correction is required.
9. The disclosure is objected to because of the following informalities: the status of all applications referenced in the specification (whether abandoned or patented/patent#) must be updated. For example, see paragraphs 0055, 0057, 0059-0061, 0078, 0101, 0104. Appropriate correction is required.
10. The preliminary amendment filed on 11/14/03 does not introduce new matter into the disclosure.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
12. Claims 56-58 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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13. Claims 56-58 recite the limitation "a power demand signal" in lines 2-3 (claims 56-57) and line 3 (claim 58). There is insufficient antecedent basis for this limitation in the claim.

Notice that claim 51 contains an earlier recitation thereof.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 50-58 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 9, 19-21 and 33-36 of U.S. Patent No. 6740437. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

The US patent'434 claims the following (CLAIMS 1-4, 9, 19-21 and 33-36):

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1. A fuel cell system, comprising:

a fuel cell, a fuel supply, an oxidant supply, a power demand sensor, a heat demand sensor, and a controller; wherein the fuel cell is adapted to receive a fuel flow from the fuel supply, and an oxidant flow from the oxidant supply; wherein the controller is connected to each of the fuel supply, oxidant supply, power demand sensor, and heat demand sensor, and wherein the controller is further adapted to receive a power demand signal from the power demand sensor and a heat demand signal from the heat demand sensor;

wherein the controller is adapted to reduce at least one of the fuel flow and oxidant flow when there is no heat demand signal and no power demand signal;

wherein the controller is adapted to increase at least one of the fuel flow and oxidant flow when there is no heat demand signal and there is a power demand signal;

wherein the controller is adapted to increase at least one of the fuel flow and oxidant flow when there is no power demand signal and there is a heat demand signal; and

wherein the controller is adapted to increase at least one of the fuel flow and oxidant flow when there is a power demand and a heat demand signal.

2. The system of claim 1, wherein the power demand sensor is a fuel cell voltage sensor that produces a power demand signal when a voltage of the fuel cell falls below a predetermined level.

3. The system of claim 1, wherein the power demand sensor is a fuel cell current sensor that produces a power demand signal when an output current of the fuel cell exceeds a predetermined level.

4. The system of claim 1, wherein the power demand sensor comprises a fuel cell output current sensor an electrical load sensor, wherein the power demand sensor produces a power demand signal when an electrical load on the fuel cell exceeds an output current of the fuel cell.

9. The system of claim 8, wherein the radiator comprises a fan connected to the controller, and wherein the controller is adapted to reduce an output of the fan when there is a heat demand signal, and the controller is further adapted to increase an output of the fan when there is no heat demand signal.

19. The system of claim 7, further comprising a valve and a fuel bypass circuit;

wherein the valve is connected to the controller, and the fuel bypass circuit is adapted to divert a portion of the fuel flow from an inlet of the fuel cell to the oxidizer; and

wherein the controller is adapted to actuate the valve to divert the portion of fuel flow from the fuel cell inlet to the oxidizer when there is a heat demand signal, and the controller is further adapted to actuate the valve to divert the portion of fuel flow from the fuel cell inlet to the oxidizer when there is no heat demand signal.

20. The system of claim 1, wherein the controller comprises a computer usable medium having computer readable code embodied thereon.

21. The system of claim 1, wherein the controller is programmable.

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33. A fuel cell system, comprising:

a fuel cell, a fuel processor, an oxidant supply, a power demand sensor, a heat demand sensor, a controller, and an electrochemical hydrogen separator;

wherein the fuel cell is adapted to receive a fuel flow from the fuel processor, and an oxidant flow from the oxidant supply;

wherein the controller is connected to each of the fuel supply, oxidant supply, power demand sensor, and heat demand sensor, and wherein the controller is further adapted to receive a power demand signal from the power demand sensor and a heat demand signal from the heat demand sensor;

wherein the hydrogen separator is adapted to receive the fuel flow from the fuel processor and separate hydrogen from the fuel flow into a reservoir when the hydrogen separator is activated;

wherein the controller is adapted to reduce at least one of the fuel flow and oxidant flow when there is no heat demand signal and no power demand signal;

wherein the controller is adapted to increase at least one of the fuel flow and oxidant flow when there is no heat demand signal and there is a power demand signal;

wherein the controller is adapted to activate the hydrogen separator when there is no power demand signal and there is a heat demand signal; and

wherein the controller is adapted to increase at least one of the fuel flow and oxidant flow when there is a power demand and a heat demand signal.

34. The system of claim 33, wherein the power demand sensor is a fuel cell voltage sensor that produces a power demand signal when a voltage of the fuel cell falls below a predetermined level. 5

35. The system of claim 33, wherein the power demand sensor is a fuel cell current sensor that produces a power demand signal when an output current of the fuel cell exceeds a predetermined level. 10

36. The system of claim 33, wherein the power demand sensor comprises a fuel cell output current sensor an electrical load sensor, wherein the power demand sensor produces a power demand signal when an electrical load on the fuel cell exceeds an output current of the fuel cell. 15

In this case, the subject matter of US Patent '437 anticipates the subject matter of the present application.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

19. Claims 50-58 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the WO publication WO 01/15929 (heretofore the WO'929) (*for purposes of rejection, Yamada et al 6793027 is cited as it is an English equivalent of WO'929*).

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As to claims 50-51:

Yamada et al disclose a hybrid system including a fuel cell (ABSTRACT). A hydrogen supplying device for supplying hydrogen for power generation is provided to the fuel cell unit 7a (COL 6, lines 11-25). Air (the oxidant) is supplied to the fuel cell (COL 9, lines 47-53). Using air and hydrogen, power generation is performed in the fuel cell (COL 9, lines 50-53).

A fuel cell controller 71 controls the fuel cell on the basis of the data from the controller 5; the fuel cell controller is provided with detection means for detecting the state of the fuel cell and comprise various temperature sensors S21 (heat demand sensors), a fuel cell voltage sensor S22 and a fuel cell current sensor S23 (COL 7, lines 44-55). Content of data includes information such as temperature, voltage, current, error information and capacity, and control information such as output request (COL 11, lines 57-67).

An electromotive force control is performed based on the data (signals) from sensors S21-S23 and the detected data on the operating conditions, the desired flow rate of each switching valve is calculated by the fuel cell controller 71 based on the calculation results so as to adjust the quantity of hydrogen (COL 9, lines 29-45).

As a result of flow control achieved, the amount of hydrogen supplied to the fuel cell can be regulated for electromotive force control, so that the electromotive force is controlled according to the amount of hydrogen supplied thereto (COL 9, lines 24-28). The output of the fuel cell is connected to the power regulating section for regulation purposes (COL 10, lines 43-47). *Thus, control of at least fuel flow is based on the heat generated by the fuel cell and the output of the fuel cell.*

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Fuel cell unit 7 is determined to be abnormal when the detection value of any of the temperature sensor, fuel cell voltage sensor and fuel cell current sensor is excessively large or small beyond the range of normal detection values which are stored as detection data on abnormality in the memory of the fuel cell controller 71 (COL 12, lines 26-32).

As to claims 52-58:

Yamada et al disclose that fuel cell unit 7 is determined to be abnormal when the detection value of any of the temperature sensor, fuel cell voltage sensor and fuel cell current sensor is excessively large or small beyond the range of normal detection values which are stored as detection data on abnormality in the memory of the fuel cell controller 71 (COL 12, lines 26-32). An electromotive force control is performed based on the data (signals) from sensors S21-S23 and the detected data on the operating conditions, the desired flow rate of each switching valve is calculated by the fuel cell controller 71 based on the calculation results so as to adjust the quantity of hydrogen (COL 9, lines 29-45). As a result of flow control achieved, the amount of hydrogen supplied to the fuel cell can be regulated for electromotive force control, so that the electromotive force is controlled according to the amount of hydrogen supplied thereto (COL 9, lines 24-28). The output of the fuel cell is connected to the power regulating section for regulation purposes (COL 10, lines 43-47). *Thus, control of at least fuel flow is based on the heat generated by the fuel cell and the output of the fuel cell. In this case, it is noted that the controller of Yamada et al is capable of performing the claimed function based on the particular sensed conditions. Thus, the controller of Yamada et al inherently controls the fuel cell system as instantly claimed in claims 52-58. In other words, the examiner is asserting inherency based on*

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the structural and functional similarities between the disclosed controller and applicant's controller. In re Schreiber, 128 F.3d 1473, 44 USPQ2d 1429 (Fed. Cir. 1997).

As per MPEP 2112 Requirements of Rejection Based on Inherency; Burden of Proof:

“V. ONCE A REFERENCE TEACHING PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS MADE THE BASIS OF A REJECTION, AND THE EXAMINER PRESENTS EVIDENCE OR REASONING TENDING TO SHOW INHERENCY, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBTAINABLE DIFFERENCE”

“[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).*”

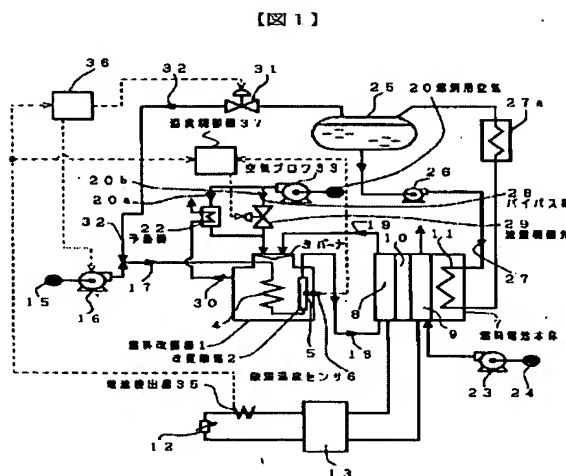
- *The evidence or reasoning tending to show inherency is relied upon Yamada et al's disclosure that that fuel cell unit 7 is determined to be abnormal when the detection value of any of the temperature sensor, fuel cell voltage sensor and fuel cell current sensor is excessively large or small beyond the range of normal detection values which are stored as detection data on abnormality in the memory of the fuel cell controller 71 (COL 12, lines 26-32). This provides a reasonable basis to recognize that variations on temperature (heat), voltage (output) or current controls the fuel flow, and therefor the controller of Yamada et al is capable of performing the claimed function.*

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20. Claims 50-55 and 57-58 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the Japanese publication JP 04-284365 (herein called the JP'365).

As to claims 50-51:

Figure 1 of the JP'365 illustrates a fuel cell power generating device (TITLE/ FIGURE 1) including a fuel cell 7 respective oxidant supply 24 and fuel supply 18 (FIGURE 1) which are provided for power generation; and a controller 36 for controlling fuel cell operating parameters (FIGURE 1). Particularly, controller 36 controls flow rate control valve 29 in response to conditions sensed by both temperature sensor 6 (heat sensor) and a current detector 35 (power demand sensor), and which is further adjusted according to a load current value of the fuel cell main body 7 (Abstract/Constitution).



As to claims 52-55 and 57-58:

Particularly, the JP'365 discloses that controller 36 controls flow rate control valve 29 in response to conditions sensed by both temperature sensor 6 (heat sensor) and a current detector 35 (power demand sensor), and which is further adjusted according to a load current value of the

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fuel cell main body 7 (Abstract/Constitution). *Thus, control of at least fuel flow is based on the sensed temperature and the measured current and the load current value of the fuel cell. In this case, it is noted that the controller of the JP'365 is capable of performing the claimed function based on the particular sensed conditions. Thus, the controller of the JP'365 inherently controls the fuel cell system as instantly claimed in claims 52-55 and 57-58. In other words, the examiner is asserting inherency based on the structural and functional similarities between the disclosed controller and applicant's controller. In re Schreiber, 128 F.3d 1473, 44 USPQ2d 1429 (Fed. Cir. 1997).*

As per MPEP 2112 Requirements of Rejection Based on Inherency; Burden of Proof:

“V. ONCE A REFERENCE TEACHING PRODUCT APPEARING TO BE SUBSTANTIALLY IDENTICAL IS MADE THE BASIS OF A REJECTION, AND THE EXAMINER PRESENTS EVIDENCE OR REASONING TENDING TO SHOW INHERENCY, THE BURDEN SHIFTS TO THE APPLICANT TO SHOW AN UNOBVIOUS DIFFERENCE”

“[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).*”

- *The evidence or reasoning tending to show inherency is relied upon the JP'365's teaching that controller 36 controls flow rate control valve 29 in response to conditions sensed by both temperature sensor 6 (heat sensor) and a current detector 35 (power demand sensor), and which is further adjusted according to a load current value of the fuel cell main body 7*

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(Abstract/Constitution). This provides a reasonable basis to recognize that variations on temperature (heat) and or current controls the fuel flow, and therefore the controller of the JP'365 is capable of performing the claimed function.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
PRIMARY EXAMINER